

What is claimed is:

1. A disk for information storage, comprising:
 - (a) a substrate;
 - (b) an information layer for containing information, wherein at least one of the following conditions is true: (i) the disk has at least two recording parameters that vary radially, (ii) the information layer has a writing property that varies radially, (iii) an underlayer located between the substrate and the information has a layer thickness that varies radially to cause a recording parameter of the disk to vary radially, and (iv) the information layer has a thickness that increases progressively from an inner disk diameter to an outer disk diameter.
2. The disk of Claim 1, wherein the at least two recording parameters of condition (i) include a magnetic moment (Mrt) and a coercivity and wherein each of the Mrt and coercivity are substantially constant along the length of a selected radial track.
3. The disk of Claim 1, wherein at least one of the magnetic remanence and the magnetic moment (Mrt) of the disk vary radially.
4. The disk of Claim 2, wherein the thickness of the Mrt increases from the disk inner diameter to the disk outer diameter.
5. The disk of Claim 1, wherein the underlayer has a thickness that decreases from the inner diameter of the disk to the outer diameter of the disk.

6. The disk of Claim 3, wherein at least one of the magnetic remanence and the magnetic moment M_{rt} of the disk increase from the inner disk diameter to the outer disk diameter, and the coercivity decreases from the inner disk diameter to the outer disk diameter.

7. The disk of Claim 1, wherein the information layer includes a first magnetic layer, a second magnetic layer, and an at least substantially non-magnetic layer located between the first and second magnetic layers and a thickness of at least one of the first and second magnetic layers increases from the inner diameter to the outer diameter.

8. The disk of Claim 1, wherein the substrate includes one of the following: an aluminum plate, a ceramic plate, and a glass-based plate.

9. The disk of Claim 1, further comprising:
a protective layer, the information layer being located between the protective layer and the underlayer.

10. The disk of Claim 9, further comprising:
a barrier layer that is located between the information layer and the protective layer.

11. The disk of Claim 9, further comprising:
a lubricant layer that is located adjacent to the protective layer and separated from the information layer by the protective layer.

12. The disk of Claim 1, further comprising:

a nickel-phosphorus layer that is located between the substrate and the underlayer.

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13. A method for manufacturing a disk for information storage, the method comprising:

(a) depositing an underlayer on to a substrate; and

5 (b) depositing an information layer for containing information, wherein the substrate and information layer are located on opposing sides of the underlayer, wherein the disk has at least one of the following: (i) the information layer has at least two recording parameters that vary radially, (ii) the information layer has a writing property that varies radially, (iii) the underlayer thickness varies radially to cause the writing property of the disk to vary radially, and (iv) the information layer has a thickness that increases progressively
10 from an inner disk diameter to an outer disk diameter.

14. The method of Claim 13, wherein the at least two recording parameters of (i) include a magnetic moment (Mrt) and a coercivity and wherein each of the Mrt and coercivity are substantially constant along the length of a selected radial back.

15. The method of Claim 13, wherein at least one of the magnetic remanence and the magnetic moment (Mrt) of the disk vary radially.

16. The method of Claim 14, wherein the thickness of the Mrt increases from the disk inner diameter to the disk outer diameter.

17. The method of Claim 13, wherein the underlayer has a thickness that decreases from the inner diameter of the disk to the outer diameter of the disk.

18. The method of Claim 15, wherein at least one of the magnetic remanence and the magnetic moment (M_r) of the disk increase from the inner disk diameter to the outer disk diameter, and the coercivity decreases from the inner disk diameter to the outer disk diameter.

19. The method of Claim 13, wherein the information layer includes a first magnetic layer, a second magnetic layer, and an at least substantially non-magnetic layer located between the first and second magnetic layers.

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20. A method for recording information on a disk, comprising:
positioning a recording head at a first position, wherein the disk at the first position
has a first writing property; and

positioning the recording head at a second position, wherein the disk at the second
position has a second writing property, wherein the first position and second position are at
differing distances from a center of the disk and wherein the first writing property and second
writing property have differing magnitudes.

21. The method of Claim 20, wherein the first writing property at the first position
is at least about 95% of the second writing property at the second position.

22. The method of Claim 20, wherein the writing property is measured by
coercivity and the first writing property at the first position ranges from about 2,000 to about
60,000 Oersteds and the disk at the first position has a squareness S^* ranging from about 0.6
to about 1.0 and the second writing property at the second position ranges from about 2,000
to about 6,000 Oersteds and the disk at the second position has a squareness S^* ranging from
about 0.6 to about 1.0.

23. The method of Claim 20, wherein the disk at the first position has a first
magnetic remanence and at the second position a second magnetic remanence and wherein
the first magnetic remanence is less than the second magnetic remanence.

24. The method of Claim 23, wherein the first magnetic remanence ranges from about 100 to about 600 memu/cm³ and the second magnetic remanence from about 100 to about 600 memu/cm³.

25. The method of Claim 23, wherein the first magnetic remanence is no more than about 95% of the second magnetic remanence.

26. The method of Claim 20, wherein the disk at the first position has a first magnetic moment and at the second position a second magnetic moment and wherein the first magnetic moment is less than the second magnetic moment.

27. The method of Claim 26, wherein the first magnetic moment ranges from about 0.2 to about 1.0 memu/cm² and the second magnetic moment from about 0.2 to about 1.0 memu/cm².

28. The method of Claim 26, wherein the first magnetic moment is no more than about 95 % of the second magnetic moment.

29. The method of Claim 26, wherein a first thickness in the first magnetic moment is more than a second thickness in the second magnetic moment.

30. The method of Claim 29, wherein the first thickness is at least about 95% of the second thickness.

31. The method of Claim 29, wherein the first thickness ranges from about 60 to about 300 Å and the second thickness from about 60 to about 300 Å.

32. The method of Claim 20, wherein a first areal density at the first location ranges from about 20 to about 200 Gb/cm² and a second areal density at the second location from about 20 to about 200 Gb/cm².

33. The method of Claim 20, wherein the disk includes a plurality of radial, concentrically disposed zones, each zone having at least substantially uniform recording properties throughout a respective surface area of the zone and wherein the first position is in a first zone and the second portion is in a second zone.

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34. A disk drive, comprising:

(a) a disk having a first side, a second side that is at least substantially parallel to the first side, a plurality of concentric tracks located on the first side, an underlayer, and an information layer for containing information;

(b) a spin motor for rotating the disk;

(c) a recording head for recording data at a track location; and

(d) an actuator for moving the recording head relative to the disk, wherein the disk has at least one of the following: (i) at least two magnetic parameters that vary radially; (ii) a coercivity that varies radially; (iii) the underlayer has a thickness that varies radially; and (iv) the information layer has a thickness that increases progressively from an inner disk diameter to an outer disk diameter.

35. The disk drive of Claim 34, wherein the at least two magnetic parameters of condition (i) include a magnetic moment (Mrt) and a first coercivity and wherein a first radial zone being located at a first radius from a disk center has a first Mrt and coercivity at least substantially throughout the first radial zone and a second radial zone being located at a second radius from the disk center has a second Mrt and a second coercivity at least substantially throughout the second zone and the first Mrt differs from the second Mrt and the first coercivity from the second coercivity.

36. The disk drive of Claim 34, wherein the magnetic remanence of the magnetic moment (Mrt) varies radially.

37. The disk drive of Claim 35, wherein the thickness of the Mrt increases from the disk inner diameter to the disk outer diameter.

38. The disk drive of Claim 34, wherein the underlayer has a thickness that decreases from the inner diameter of the disk to the outer diameter of the disk.

39. The disk drive of Claim 36, wherein at least one of the magnetic remanence and the magnetic moment Mrt of the disk increase from the inner disk diameter to the outer disk diameter, and the coercivity decreases from the inner disk diameter to the outer disk diameter.

40. The disk drive of Claim 34, wherein the information layer includes a first magnetic layer, a second magnetic layer, and an at least substantially non-magnetic layer located between the first and second magnetic layers.

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41. A disk for information storage, comprising:

(a) an underlayer;

(b) information means for containing information, wherein the underlayer is located between the substrate and the information means and wherein at least one of the following conditions is true: (i) the disk has at least two magnetic parameters that vary radially, (ii) the information means has a coercivity that varies radially, (iii) the underlayer thickness varies radially to cause a magnetic parameter of the disk to vary radially; and (iv) the information layer has a thickness that increases from an inner disk diameter to an outer disk diameter; and

(c) substrate means for supporting the underlayer and information means.

42. The disk of Claim 41, wherein the at least two magnetic parameters of condition (i) include a magnetic moment (Mrt) and a coercivity.

43. The disk of Claim 41, wherein at least one of the magnetic remanence and the magnetic moment (Mrt) of the disk vary radially.

44. The disk of Claim 42, wherein the thickness of the Mrt decreases from the disk inner diameter to the disk outer diameter.

45. The disk of Claim 41, wherein the underlayer has a thickness that decreases from the inner diameter of the disk to the outer diameter of the disk.

46. The disk of Claim 43, wherein at least one of the magnetic remanence and the magnetic moment M_{rt} of the disk increase from the inner disk diameter to the outer disk diameter, and the coercivity decreases from the inner disk diameter to the outer disk diameter.

47. The disk of Claim 41, wherein the information means includes a first magnetic layer, a second magnetic layer, and an at least substantially non-magnetic layer located between the first and second magnetic layers.

48. The disk of Claim 41, wherein the substrate means includes one of the following: an aluminum plate, a ceramic plate, and a glass-based plate.

49. The disk of Claim 41, further comprising:
a protective layer, the information means being located between the protective layer and the underlayer.

50. The disk of Claim 49, further comprising:
a barrier layer that is located between the information means and the protective layer.

51. The disk of Claim 49, further comprising:
a lubricant layer that is located adjacent to the protective layer and separated from the information means by the protective layer.

52. The disk of Claim 41, further comprising:

a nickel-phosphorus layer that is located between the substrate means and the underlayer.

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